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THESIS

HEALTH CARE COST CONTAINMENT EDUCATION
FOR PHYSICIANS IN THE MILITARY HEALTH SER-
VICES SYSTEM

by

John Edward Carsten

September 1980

Thesis Advisor:

D. R. Whipple

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(Continuation of abstract)

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Cost containment education for physicians is seen as a method of injecting cost awareness and cost-benefit analysis into the medical education process early in the physician's career before his practice patterns are set. Emphasis is placed on the balance of access, quality, and cost of health care costs. Cost containment education for physicians is seen as a viable alternative to continued regulatory control of health care costs. Cost containment education for Military Health Services System (MHSS) physicians is seen as especially desirable due to their increased authority and responsibility within the organizational structure.

A cost containment education program for MHSS physicians is outlined in this paper with recommendations for a pilot project.

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Health Care Cost Containment Education for Physicians
in the Military Health Services System

by

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Lieutenant, Medical Service Corps, United States Navy
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Submitted in partial fulfillment of the
requirements for the degree of

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September 1980

ABSTRACT

This paper examines the underlying causal factors relative to spiralling health care costs. Special emphasis is placed on the role and responsibility of the physician concerning these costs. The physician's dominant role and patterns of practice are seen as significant determining factors in the total expenditures for health care. Overall lack of incentives for cost effective medical practice, lack of awareness of the economic impact of physician's decisions, and insufficient resource management skills on behalf of the physician combine to further exacerbate the problem of rising health care costs.

Cost containment education for physicians is seen as a method of injecting cost awareness and cost-benefit analysis into the medical education process early in the physician's career before his practice patterns are set. Emphasis is placed on the balance of access, quality, and cost of health care. Cost containment education for physicians is seen as a viable alternative to continued regulatory control of health care costs. Cost containment education for Military Health Services System (MHSS) physicians is seen as especially desirable due to their increased authority and responsibility within the organizational structure.

A cost containment education program for MHSS physicians is outlined in this paper with recommendations for a pilot project.

TABLE OF CONTENTS

I.	INTRODUCTION -----	7
II.	HEALTH CARE COSTS -----	11
III.	PHYSICIAN ROLE AND RESPONSIBILITY -----	26
IV.	COST VS QUALITY -----	36
V.	OBJECTIVES OF COST CONTAINMENT EDUCATION FOR PROVIDERS -----	45
VI.	COST CONTAINMENT EDUCATION -----	55
VII.	DISCUSSION AND RECOMMENDATIONS -----	70
	BIBLIOGRAPHY -----	80
	INITIAL DISTRIBUTION LIST -----	85

LIST OF TABLES

I. Use of Health Care Dollars, 1978 -----	12
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I. INTRODUCTION

Few issues today attract the concern and controversy that surrounds the upward spiraling costs of health care. This burden is borne by every American through health insurance premiums, taxes, and direct payments for hospital and medical care. It is understandable that the health care system has become the subject of continuous study and concern as attempts are made to control costs and increase effectiveness.

The Department of Defense (DOD) has not escaped the rising costs of health care. This can be seen in increasing expenditures for medical equipment and supplies as well as increased direct outlays for purchased goods and services provided by the civilian sector. The impact has been magnified by reductions in defense spending following the end of the U.S. involvement in Viet Nam. The medical departments of the three military services have come under close congressional scrutiny in an attempt to control resource allocation and evaluate effectiveness and efficiency in the utilization of these scarce resources.

Most efforts to contain health care costs have been aimed at hospitals. This no doubt is due to the high visibility of these institutions. It is within these facilities that the major portion of health care resources are drawn

together. Hospital costs have exhibited the steepest rise of any segment of health care.

The cost containment efforts in the past have primarily consisted of various waves of regulations. Examples of this can be seen in certificate-of-need legislation (to control expansion of facilities and capital investment), support of Health Maintenance Organizations (HMO's) and other methods of prospective reimbursement in an attempt to provide incentives to hold down costs, Professional Standards Review Organizations (PSRO's) in an effort to control the quality and effectiveness of the health care provided, and attempts to control costs directly by limiting third party reimbursement. These attempts are chiefly efforts to exert external controls on the present system of health care delivery. It is still too early to pronounce final judgement on these efforts, but at present the results seem mixed and overall somewhat disappointing. The external approach seems to have, at least in some cases, aggravated the problems it was intended to correct.

This author proposes that the most effective form of control must come from within the system, voluntarily, by those who are able to command the greatest influence in the broadest areas.

In recent years more and more attention has focused on the role of the physician as the primary decision maker and "driver" of the health care system. It is with this role in

mind that many have proposed that the physician must somehow be made more aware of his direct and indirect impact on the cost of health care delivery. The physician must be given the necessary management tools to provide for the effective, efficient application of scarce health care resources.

The purpose of this study is to: Identify the major aspects of rising health care cost with primary emphasis on the physician's role and his responsibility for these costs; Examine efforts to introduce cost awareness into the medical education process and attempt to determine the effectiveness of such efforts; Formulate the basis for a health care cost-containment education program structured for the specific needs of the Military Health Services System (MHSS).

The study is primarily based on a search of health care literature dealing with the issues and proposed solutions. Emphasis is placed on determining similarities and differences between the structure and processes of the MHSS and those representatives of the civilian sector in order to attempt to build upon apparent successes in the civilian sector.

Chapter II is an examination of the various aspects of the rising health care costs and their underlying causes. These findings are related to parallel conditions existing in the MHSS. Chapter III focuses on the physician's role and responsibility for the cost of health care. Implications

of this role are related to the content and structure of an effective cost containment education program. The basic differences in roles and incentives between the military physician and his counterpart in the civilian sector are examined. Chapter IV discusses the relationship of the quality of health care to the cost of health care especially as it relates to cost-containment education. Chapter V proposes objectives for a cost-containment education program and examines present and proposed programs in the civilian sector. Chapter VI outlines the structure of a proposed cost containment education program, which includes content, scope, authority, responsibility, implementation, and various relationships and interdependences with existing programs within the MHSS. Finally, chapter VII offers a discussion of expected results and benefits of the proposed program. Recommendations are given for continued effort and expanded possibilities along these lines.

The problems are complex and the potential solutions are many. The existence of a single best way or perspective with which to approach this problem are unlikely. This study, while proposing one possible approach, does not discount other possibilities. The solution to the present problems will take concerted efforts in many areas. It is hoped that this study will contribute toward an eventual solution.

II. HEALTH CARE COSTS

In order to approach the task of health care cost containment education it is necessary to gain an understanding of the scope and sources of these costs. Successful solutions can only be found by accurately defining the problems we face and attempting to approach those areas which are controllable. With this in mind an attempt will be made to examine the significant trends and causes of the rapidly rising cost of health care.

National expenditures for health care, in calendar year 1978, reached \$192.4 billion. Table 1 breaks down, by percentage, where these health dollars were spent. This expenditure is 13.2 percent higher than the figure for 1977, and is equivalent to 9.1 percent of the Gross National Product (GNP). Of the 13.2 percent (or \$25.4 billion) increase in 1978, inflation accounted for 63 percent of the growth in expenditures. Population growth accounted for an additional 7 percent. The other 30 percent of the increase is attributed to changes in the use and composition of goods and services [Gibson 1979, p. 2]. It is this 30 percent of "intensity" increase with which we will be primarily concerned. The 1978 figures are used as an example of past and present trends. It must be noted that even the 63 percent attributed to inflation is likely to include the

TABLE I

USE OF HEALTH CARE DOLLARS
1978

CATEGORY	PERCENTAGE
Hospital Care	39.5
Physicians' Services	18.3
Dentists' Services	6.9
Other Professional Services	2.2
Drugs and Drug Sundries	7.9
Eyeglasses and Appliances	2.0
Nursing Home Care	8.2
Other Personal Home Services	2.3
Expenses of Prepayment and Admin.	5.2
Gov.t Public Health Activities	2.6
Research and Medical Facilities Const.	4.9
TOTAL	100.0

[Gibson 1979, p. 4]

inflated costs of past changes in intensity of services provided.

Since 1950, health care costs have risen from 4.6 percent of the GNP to the present 9.1 percent. Unchecked, medical costs are estimated to double every five years, a rise far in excess of inflation [National Fund for Medical Education 1979, pg. 2].

The problems of rising health care costs are not limited to the private sector. The Department of Defense (DOD) too has felt the pressure of escalating costs. While DOD health and medical expenses have remained between 2 percent and 3 percent of the total defense budget, they have kept pace with the spiraling costs seen in the rest of the nation. DOD health care expenditures rose from approximately \$1.2 billion in 1967 to over \$3.6 billion in 1978. This represents a real growth of 30 percent in constant 1967 dollars. A significant amount of this growth has been associated with increased costs for CHAMPUS, the Civilian Health and Medical Program of the Uniformed Services [Rice, D. 1979]. The increased expenditures for the care of military dependents and retired personnel in civilian facilities, funded through CHAMPUS, may be taken as a direct reflection of the rising costs in the private sector.

There are many reasons for the increases in health spending: Growth in the use of insured services (both public and private) has brought greater access to many,

especially the aged and the poor; advances in technology have increased the power to prolong life and enhance its quality; the population has aged; the pay of health care workers has risen to general parity with other industries; and rising incomes and expectations have increased consumer demand for health care services. One should not be misled into believing that the growth in health spending is all bad. However, doctor's fees and hospital costs have risen faster than consumer prices in general and it is said that the wages of health care workers have overshoot equality with other industries [Enthoven, 1978]. Most critically it appears that there is inefficiency, duplication of costly underutilized facilities, maldistribution of providers, and excessive utilization of some services.

Of the factors mentioned, increased access to health care may have been one of the most significant. In 1946, the federal government began to address the issues of access to hospital care with the passage of the Hill-Burton Act to aid hospital construction. An emphasis on convenient access began to grow into a definitive policy of guaranteeing access to high-quality care to all Americans. With the passage of programs such as Medicare, Medicaid, medical manpower acts, and hospital planning programs, the guaranteed access policy became firmly established [Aden, 1979]. This increased access has resulted in a general feeling that health care is a "right". This "right" has brought with it a price that has

grown and spread through society in the form of increased taxes and health insurance premiums. The proliferation of the exercise of this right, and of the various methods to subsidize the cost, may have contributed more to the unbridled rise in health care costs than any other mechanism. In 1978, third party payments (public and private) financed 90 percent of the costs of hospital care services and 66 percent of the physician's fees [Gibson 1978, p. 8]. This subsidy has effectively isolated the patient and provider from the knowledge and awareness of actual costs. This has circumvented an important incentive for cost control in the doctor/patient relationship. The basic fact is that presently more people can afford to use hospitals and health services either by increased affluence of insured services. It has been said that there may be a natural law that says "the cost of illness increases in proportion to the ability to collect for it" [Robbins 1975].

Another aspect of increased costs is that, with the increase in the average age of the population, the aged segment comprises a larger percentage of the total population. Older people, on a per capita basis, suffer from more health deficiencies than do younger people and therefore require more medical attention at all levels. This usually entails more physician visits, greater numbers of hospital admissions, longer hospital stays, and a greater incidence of chronic illness [Anderson 1973]. This is a factor that will continue to be increasingly significant to the cost and structure of health care delivery.

The Military Health Services System (MHSS) has experienced a growth in its beneficiary population, as well. While the active duty population has been shrinking from both the effects of the post-Viet Nam stand-down and the ending of the Draft, the number of retired military personnel has increased substantially. Statistics drawn from federal budget submissions over the past 20 years indicate the size of this trend. In 1960, this group numbered approximately 250,000. By 1975, the retired community had grown to 1 million members, not including their dependents, whose numbers were estimated to be well over 2 million at that time. In the authors opinion there is no reason to believe that this trend will change in the near future. Given the trend toward longer life expectancy and the upward shift in the average age of the population in general, it can be expected that the situation will become more acute relative to health care resources. It should be noted that the fastest growing beneficiary group, those 65 and over, are not eligible for CHAMPUS benefits [Military Health Care Study 1975, p. 24]. This may assist in reaching a certain amount of stability in the size of the MHSS patient population.

The other side of the access/utilization issue is that which is controlled by the health care providers. As a rule the patient initiates the first visit. From then on the provider, at whatever level, tends to determine the intensity of the total episode. This issue will be examined in depth

in the chapter dealing with the physician's role with respect to health care costs.

Increasing use of costly technology has greatly added to the cost of health care. The computerized axial tomography (CAT) scanner is probably the most notorious example of recent advances in high cost technology. The CAT scanner, which scans soft tissues, allows for increased accuracy of non-invasive diagnostic procedures. Each one of these units has a price tag of around \$1 million, not including operators and support personnel [Herzlinger 1978]. While better care is the desired result, widespread duplication of such very expensive quality-improving changes is not. The same can be said of the proliferation of intensive care units, dialysis facilities, and open-heart surgical units. The cost of duplication of services is seen in the necessity to charge higher costs per treatment due to spreading the total cost over a smaller patient load, or worse, driving up total cost by increasing the workload with unnecessary utilization in order to justify the original investment.

The growth of expensive technology has been felt in military medicine as well. The control of this growth has been attempted by means mostly external to the local facility. These means are mostly in the form of budgetary restraints rather than the "need" legislation found in the civil sector. The central control of investment in expensive technology within each branch of service has had some success in preventing duplication of costly services. The real problem

is exhibited in duplication of large complex medical facilities in areas served by several military medical departments. Presently there is a lack of strong central control in the MHSS to provide for increased coordination and sharing of expensive technologically complex facilities.

The trend toward increased specialization by physicians has added significantly to the cost of health care, especially in primary-care settings. As fewer doctors opt for general practice and the number of specialists increases, patients are more and more utilizing specialists for routine minor care [Mechanic 1972]. It is reasonable to assume that the cost of these encounters would be higher than that at a lower, but adequate, provider level. In addition to commonly higher fees, specialists and subspecialists in primary-care settings order more procedures than family physicians and general practitioners and have longer encounters [Mechanic 1972]. Although such methods may involve higher quality, the benefits derived from a more intensive approach in ambulatory settings are still a matter of conjecture.

The military has problems with the provider specialty-mix similar to those experienced in the civilian sector. The MHSS has an acute need for primary care physicians, especially in peace time. This need often goes unmet for the same reasons found in the civilian sector: a general move toward specialization. This situation is exacerbated by an overall shortage of military physicians. This requires

in many cases that specialists staff areas normally filled by primary care physicians. This in turn increases the cost of medical care in such high utilization areas as the primary care clinic and military sick call. While in the military, specialists do not command a higher salary than general practitioners, they do, as noted, practice a more expensive style of medicine (i.e., more tests, longer visits, and more frequent return visits).

Another reason for higher health care costs is the existence of empty hospital beds. Since 1950, the number of hospital beds has more than doubled, and it has been estimated that between 25 percent and 30 percent of these beds lie empty daily [Dresnick, et al., 1979]. The U.S. Chamber of Commerce's Committee on Health estimates that these empty beds cost \$2 billion a year [Dresnick, et al., 1979]. This \$2 billion may be irreducible in the short run due to the structure of the costs and the scattered physical location of the beds involved. The major portion of this cost is based on fixed overhead costs and initial setup costs which are amortized across future years for reimbursement computations. The elimination of the one or two excess beds from each ward would have little effect on the staffing and overhead costs in the short run. It is important to resist filling these beds solely to avoid the cost of empty beds. Full beds require greater expenditures than empty ones. While certificate of need legislation has had a moderating

effect on the growth of new beds, the problem of excess beds is still of concern in many areas.

The MHSS also has the problem associated with excess beds or at least it would seem so according to findings by the 1975 Military Health Care Study (p. 36). This study found that of a total of 19,252 DOD hospital beds in fiscal year 1974, an average of 1,387 beds were unoccupied each day. As in the private sector these beds have an associated cost, even when empty. The problem is not how to fill these empty beds (civilian or military), but how to eliminate this excess capacity and its associated fixed cost.

It is evident that the causes for rising health care are complex and numerous. The efforts to contain these costs will have to be varied and innovative. Given that almost 40 percent of the health dollar goes for hospital care it is easy to see why most cost containment efforts have concentrated on the hospital. Most of these efforts have been in the form of external regulations that have attempted to treat the hospital as a single entity. The complex structure of responsibility and control found in hospitals may not be as responsive to external regulation as some have hoped. A recent investigation of the decision making process in hospitals has shown the complexity of this structure, with the physician as the primary decision-maker [Rice and Todd 1979]. This insight is consistent with an alternative and internal approach to the cost containment problem, one

which examines the interplay of the underlying factors influencing costs and attempts to apply leverage at the source rather than continue to treat symptoms alone. Education and awareness may be a far more effective catalyst for change than regulation could ever be.

In general the problems affecting the cost of health care are common to both the military and civilian sectors. The primary differences have to do with organizational structure and methods for payment. The actual practice of medicine is essentially the same. MHSS physicians, for the most part, are trained in civilian medical schools. Some military doctors attend civilian resident programs. Others are trained in military hospitals. Assuming the military physicians share a common background with their civilian colleagues, the focus of cost containment should seek a common approach.

A clue to the direction of this search can be seen in a simple formula proposed by Fuchs (1974, p. 96): $\text{Hospital expenditures} = \text{admissions} \times \text{length of stay} \times \text{cost per patient day}$. This model may seem simplistic, but it points toward the physician as a key operant in the question of hospital costs. The physician decides to admit patients and when to discharge them. It is the physician who sets the intensity level of the encounter, which in turn largely determines the cost per patient day. Most pressure on physicians to control cost has been remote and impersonal,

usually in the form of increased government regulation, independent of quality considerations, and without any historic evidence that these controls will result in more efficient or equitable services [Weisbord and Stoelwinder 1979].

One theme, that seems to be common to most literature dealing with the cost of health care, is the lack of incentives for those concerned to curb these costs. The present tax-supported system of fee-for-service reimbursements for doctors, cost-based reimbursement for hospitals and third-party intermediaries to protect consumers by spreading the monetary risk, offers the wrong type of incentive for all. Fee-for-service rewards the doctor for providing more and more costly services, whether or not more is necessary or beneficial to the patient. Cost-based reimbursement rewards the hospital with more revenue for generating more costs. A hospital administrator who seriously attempts to cut costs (e.g., by instituting tighter controls on surgical procedures and laboratory use and avoiding the purchase of costly diagnostic equipment) tends to be punished with a loss in revenue, a resulting loss in physician staff, and therefore fewer patients. Third-party reimbursement mechanisms leave little incentive for consumers to question the value of the services received or to shop among available sources of care [Enthoven 1978].

The military environment suffers from a similar lack of incentives. The physician is salaried and is essentially

bound only by "quality" and "need" in determining the intensity of the care prescribed. The hospital or medical center funding is based on historic workload costs plus a negotiated amount to allow for growth. The consumer incurs no expense in the direct care segment of the MHSS and for only a fraction of the cost of care provided under CHAMPUS.

The need for increased awareness of cost factors by those within the health care industry has been included as a priority objective of the health sector's Voluntary Effort (VE). The VE program is a coalition of the major health care organizations including the American Medical Association, the American Hospital Association, the Federation of American Hospitals, the Blue Cross and Blue Shield Associations, the Health Industry Manufacturers Association, the Health Insurance Association of America , National Association of Counties, Virginia Knauer and Associates (consumer consultants), and representatives of business and labor. The VE's goal is to bring the rate of increase in health care costs under control by efforts from within the health care sector and therefore to avoid further government regulation [Applebaum 1979].

The VE and other cost containment efforts face a difficult and complex task which can have no quick or short term solution. The solution may result in a complete change of the structure and organization of health care delivery as it now exists. However it is difficult to imagine such an

evolution without the cooperation and support of medical practitioners. It is posited here that this support can only be obtained by providing physicians with the necessary awareness and skills to deal with the complex issues that will tend to shape the future.

Ultimately the question is not whether the nation is spending too much for health care, but rather whether or not the benefits gained justify the expenditures. Alternatives must be investigated to increase the quality, while maintaining or decreasing expenditures. All sectors of the health care system must develop alternatives to present behavior patterns. There must be a strengthening of cost consciousness by both the consumer and the provider, or wide spread external controls will be exerted to regulate the system [Boxer 1978].

Typical in-house attempts at cost control often focus on improving administrative efficiency through improved budgeting, systems analysis, industrial engineering and other work simplification/productivity methods. It has been suggested that these methods yield minimal savings, perhaps \$100,000 a year on a \$10 million budget [Weisbord and Stoelwinder 1979]. This savings, even when multiplied across the 7,000 plus hospitals in the U.S., is only in the range of \$700 million. While this may seem significant, consider the effect of a small act by a physician. If in 1975 each doctor in the U.S. had reduced the length of stay by one day for one patient each week over \$2 billion in hospital

expenses would have been saved. In the same year, if each physician had avoided overnight stays by two patients each week, (by preadmission testing or outpatient surgery) \$4 billion more in savings would have resulted. Additionally, if each doctor had ordered only one less x-ray and 5 less laboratory tests each week, \$670 million more would have been saved [Kirchner 1978]. This example would seem to be evidence that any serious attempt at effectively containing the cost of health and medical care must involve the physician and his method of practicing medicine.

III. PHYSICIAN ROLE AND RESPONSIBILITY

In the preceding chapter, a discussion of general factors underlying the rapid escalation of health care costs continually highlighted the central prominence of the physician as a dominant influence in "how" and "how much of" the nations health care resources are used. In this chapter, this central role and its implications for cost containment will be examined.

Although the problem of controlling rising health care costs has been approached from many avenues, it is only recently that attention has focused on the role of the physician. Most cost containment attempts have, at best, indirectly affected the physician. Few effective approaches have been made toward the physician's behavior directly, including external rate setting (usual and customary fees) and various reimbursement caps. None of these measures have taken into account the effect of the patterns of practice or role of the physician.

The logic of this approach is shown in Stevens (1977) analogy of the back-seat driver. Suppose a program were implemented to control reckless driving. Under this program a monitor is placed in the back seat of every car in America. The monitor's duty is to admonish and harass the driver whenever things begin to get out of control. As bizarre and

backwards as this example seems, this is just what is happening. Attempts are being made to regulate and control hospital and medical services without clearly looking at the way medicine is being practiced. The monitor, while being held responsible, has little direct control over the actions of the car. The physician, as driver, controls the speed and direction of travel.

While physician fees account for only about 20 percent of the total health care bill, it is estimated that anywhere from 50 percent to 75 percent of annual health care expenditures are determined, directly or indirectly by physicians [Dresnick 1979]. There is a growing belief that as least as far as hospital services are concerned, the physicians, rather than the patients, are the real consumers. A patient perceiving a change in his well-being can at best generate only a minimal level of response from the health care system. Regardless of the patient's level of perceived needs or implied demands, these needs can only become effective demands if they are legitimized by a physician. It is the outcome of the initial medical encounter (i.e. patient presents self at emergency room or doctors office with perceived illness) which determines the subsequent demands for service. In view of the fact that the patient cannot order diagnostic testing, hospital admission, surgery, or prescribe drugs, he must rely on the physician to act as his "agent" [Berki 1972]. As Dr. Paul Elwood has put it so well, "Hospitals don't have patients; doctors have

patients and hospitals have doctors." [Quoted in-Fuchs 1974, p. 58]. Victor Fuchs (1974, pp. 56-58) brings forth the idea of the physician as captain of the health team and identifies the significance of the physician/hospital relationship. The physician, while outside the formal organization of the hospital, is the "gatekeeper" to the production of medical care. It is the physician who orders laboratory tests, x-rays, and other diagnostic procedures, recommends surgery or hospitalization, prescribes the method of treatment, admits and discharges patients, and prescribes drugs. These functions set the level and directions of activity of other health professionals in and out of the hospital setting.

The dominant role of the physician is more explicit in the MHSS. The military physician has similar control over the type and intensity of medical care delivered as exhibited by his civilian counterpart. Unlike the majority of civilian physicians, the military doctor is formally a part of the hospital or medical center's organizational structure. The military doctor possesses significant military authority as a military officer in addition to professional authority as a physician. Major positions of authority in the military medical departments are filled by physicians. As commanding officers of medical facilities, the physicians are in effect Chief Executive Officer and Chief of Medical Staff combined, and in some respects they act as the board of trustees. Given the formal position

and authority of physicians, (from chairman of a clinical department to surgeon general of an armed services medical department), it is not difficult to imagine the amount of control they exert over the use of costly medical resources. While some effort is made to increase the managerial skills of those senior medical officers involved in positions of higher authority (ie., commanding officers and significant staff functions), the present situation concerning rapidly rising costs and scarce resources would seem to indicate a need for expanded efforts at all levels.

As stated earlier, after the first patient initiated encounter it is normally the physician who sets the pace or intensity of the care provided during that entire illness episode. There is evidence that the level of intensity of the care provided (the quantity of services delivered to a patient during a day in the hospital) is increasing each day. For example, the American Hospital Association's hospital intensity index indicates that in July of 1978 an average patient day consisted of 52.9 percent more treatments, procedures, tests, nursing hours of care, and other services than a patient day in 1969. The 1978 rate of intensity was 3.9 percent higher than in 1977 [Tway 1978]. The increase of the intensity of services does not seem to be isolated to the hospital setting. The total volume and per capita number of physician office visits have changed very little over the last few years, but the number of services provided to patients has grown rapidly. During the period from 1972 to

1977 physician visits per capita actually decreased from 5.0 to 4.8. Although during this time out-of-hospital laboratory tests increased from under 900 million to over 1.5 billion or from 850 tests per 1,000 physician visits to 1510 per 1,000 visits [Gibson 1979]. This situation is not limited to the private sector. In fiscal year 1979 there were 43 million laboratory tests and 7 million x-rays performed in Navy Medical Department facilities. This is a 7 percent increase over fiscal year 1978 and 28 percent higher than fiscal year 1975. This increase came during a period when the number of hospital admissions and outpatient visits were down [Arentzen 1980].

Various explanations have been put forth to account for at least part of this increase in intensity of health care services. One explanation of the increased intensity of health care services deals with what Fuchs (1974, p. 60) has termed the "technological imperative": The physician wants to do everything that he has been trained to do, regardless of the benefit-cost ratio. This practice involves the tendency to use any intervention possible regardless of cost (or physical discomfort to the patient) if there is any possibility of even the smallest gain. This tendency if carried to its extreme, may generate fantastic expense for relatively small and at times, counterproductive outcomes [Fuchs 1968]. The implications of following this "technological imperative" and its resultant impact on the cost of health care are not difficult to imagine.

Another explanation for the increased intensity deals with the practice of defensive medicine. There appear to be two types of defensive medicine practiced. One, termed "positive" defensive medicine, concerns the performance of a test or procedure not because it is deemed essential, but because if the patient has a bad outcome the doctor cannot be cited for negligence for not having performed it. This practice contributes to increased costs. The second type, termed "negative" defensive medicine, occurs when a physician avoids a potentially beneficial procedure for fear risks might arise from resulting complications. Negative defensive medicine does not directly increase costs but could compromise quality and therefore increase long run costs.

Public demands and the training of health professionals seem to be based on the premise that it is dangerous to miss remote but serious and treatable disease and that early disease detection is an important and valid activity. At the same time run away medical costs and the resultant social trade-offs imply a need for a look at overall priorities.

While there has not been a great deal of investigation in this area, the few studies done indicate that defensive medicine is practiced and could account for from 8 percent to as much as 25 percent of lab and x-rays tests performed. This practice seems to stem partially from fear of malpractice litigation, while some feel that it is developed on

the basis of the physician's medical training. The patterns of practice will depend to some extent on the patterns of the physician's teachers and role models [Garb, Glieb and Elkhatib, 1978]. If 5 percent of hospital costs alone were attributed to defensive medicine, this would have accounted for 3.8 billion dollars in 1978. The potential total figure is therefore huge.

The overall patterns of practice that have lead to increasing intensity levels seem to be primarily a function of the way in which the practitioner is trained. This training combined with lessons learned in the early years of medical practice sets patterns which remain part of the physicians methodology through his active professional life [Roark 1978]. The individual judgement used by the physician in ordering a particular procedure is difficult to examine. Some physicians maintain that diagnostic procedures should only be utilized if the result will directly affect the treatment of the patient. A study by Dixon and Laszlo (1979) concluded that the percentage of laboratory data actually used in the diagnosis and treatment of patients is as low as 5 percent. The study further suggested that it would be possible to reduce the number of laboratory tests by 25 percent without eliminating any information necessary to make the same decisions.

The patterns which have lead to this increasing volume of services provided and the total embrace of technological advances have been reinforced by the lack of financial

incentives to do otherwise. In military medical facilities the isolation from the cost of care may be even more pronounced. The physician at the clinical level is usually only remotely cognizant, if at all, of the costs involved in operating his clinic or the organization as a whole. If providers have little or no knowledge of the costs involved there is little hope of providing any incentive to accept responsibility for their actions.

Various studies, dating back to 1969, have demonstrated a general lack of awareness on the part of physicians, of the cost and economic impact of the tests and procedures they order [Dresnick 1979]. One of these studies [Skipper, et al., 1976], involved the physician's knowledge of the costs of 31 commonly used diagnostic tests. Using a scale which considered a response within 25 percent of the actual cost to be correct or good knowledge, they found the overall percentage of responses falling into that broad range to be 34.6 percent. Another study, using a larger sample, at the University of Miami School of Medicine, found a similar lack of even approximate knowledge of costs. This test included questions concerning room rates, operating room charges, piped oxygen, x-rays, as well as other diagnostic and treatment procedures [Dresnick, et al., 1979].

Several studies have looked at questions concerning the effect of cost awareness on the utilization of laboratory tests. One study at the General Medical Clinic of the George

Washington University Medical Center indicated a 30 percent decrease in laboratory tests ordered following distribution of the results of a laboratory-use audit (which included cost as well as volume) to the participants. [Schroeder, et al., 1973]. Most of these studies reported a decrease in utilization following dissemination of laboratory audit results concerning costs and utilization.

A study at the Philadelphia Veterans Hospital utilized parallel medical services operated by two different medical schools to test the effect of an educational program. One of the medical services received the educational program, the other served as a control. The education program consisted of distribution of a clinical study of the prothrombin time determination test and a discussion of the test's appropriate use. A medical record audit of the two services, six months after the program was presented, revealed a 36 percent decrease in the use of the test on the study service. During this period the control exhibited a slight increase in the use of the test. It is interesting to note that after 12 months without repeat of the education program the use of the prothrombin time determination tests rose to approximately the same levels that had existed prior to the study [Eisenberg 1977].

The results of these and related studies [Garg, Glieb, and Elkhatab, 1978, Boxer, 1978; Garg, et al. 1975], indicated that an increased awareness of the economic impact of provider actions coupled with an evaluation of the

medical necessity and appropriateness of such action can have a beneficial effect on utilization and cost. These studies also seem to indicate the need for a continuing program if there is to be a long-term effect on the methods of the practicing physician.

While the majority of early cost containment effort is taking place in the civilian sector, it is possible that the military medical system may be an appropriate setting in which to study the effects of new types of health care delivery structures. A cost containment education program for health care providers could be an excellent vehicle for such an effort. Cost containment, in addition to dealing with access and intensity of care aspects, can and should deal with all facets of resource allocation decisions. This effort must deal not only with costs alone but the methodologies to arrive at useful cost/benefit ratios. As long as resources are limited in any manner, trade-offs must be made. Given the significance of the physicians role it is imperative that he be aware of the economic as well as clinical consequence of his actions.

IV. COST Vs QUALITY

It would be difficult to propose any cost containment measure without first attempting to assess its impact on the quality of health care. There has been some concern that cost containment must come at the expense of quality in health care delivery. These fears seem, for the most part, unfounded. The goals of both cost containment and quality assurance programs seem not only compatible but complimentary. In order to examine this relationship, it is useful to look into the question of quality in health care and the efforts being made to attain this goal.

Quality health care is a concept that goes beyond a question of technical excellence. It includes such factors as: availability of care (access and appropriateness); prevention; doctor/patient relationship; and both client and provider satisfaction. While the "curing" (technical excellence) aspect is integral to health care, the other factors listed above (the "caring" aspect) are a vital part of any evaluation of quality [Griffith 1978, p. 44]. The "cure"/"care" aspects underline a major division in the assessment of quality. The "cure" or technical excellence condition is one that is normally determined by medical practitioners or their peers. The "caring" aspect is usually a perception of quality based on patient satisfaction. Most accepted

definitions of quality health care combine the "caring" and "curing" aspects. In this manner quality medical care encompasses the technical aspects as well access, appropriateness, patient/provider relationships, prevention, quantity of care (omission of care as well as excessive care) and the coordination of various types of care [Donabedian 1969, pp. 9-11]. From this it is clear that quality is a complex combination of issues some of which may tend to conflict. If quality seems to be a difficult concept to translate into concrete terms, the assessment of quality is even more so.

Quality assessment is unavoidably a value judgement that involves the approximation of one or more normative standards [Twaddle and Hessler 1977, p. 229]. These standards are established primarily by physicians and medical schools based on current levels of medical knowledge and skill [Shultz and Johnson 1976, p. 186]. It is appropriate that the medical profession be intimately involved in any attempt to evaluate the quality of health care. The extent of this role is increasingly dependent on the present expansion of the concept of quality, beyond the definition of technical excellence. Yet even with pressure from consumers, government and insurance groups for increased accountability and broadened community involvement, the physician's central responsibility for the assessment of quality in health care is apparent. Historically it has been inappropriate for anyone but another physician to assess the technical quality or appropriateness

of medical care rendered by the physician. In fact the congress has provided that no final adverse Professional Standards Review Organization (PSRO) determination can be made concerning the provision of care by a physician except by another qualified physician [Rogatz 1973, p. 28].

The first review of care provided in hospitals was established by the American College of Surgeons in 1949 [Schultz and Johnson 1976, p. 191]. This came in the form of tissue committees. These committees examined human tissue removed during surgery to determine if the surgery was justified. From these beginnings, through medical audits (to measure overall quality of care) and Utilization Review required by medicare legislation) to the present PSRO's, physicians have been continually involved in quality assessment [Cerf 1976, pp. 131-2].

A number of different peer review programs are used by health institutions. Some of these quality assessing entities are in-hospital functions involving the staff physicians. Examples of the in-house groups include the tissue committees, medical audit committees and the utilization review committees. The tissue committees and medical audit committees were designed by the medical profession to ensure the quality of care. The utilization review committee was mandated by medicare legislation and intended to examine both the necessity for admission and length of stay of patients in the hospital. This was the beginning of the link of quality with costs [Aden 1979]. The newest mandated

quality assurance mechanism is the PSRO, which was brought about by the social security amendments. PSRO's are non-profit associations of physicians, open to and representative of the physicians in an area, which monitor the care provided in all the institutions in their area. Created in response to increasing indications that a significant amount of unnecessary (or inappropriate) health care was being provided [Cerf 1976, p. 135], the major objectives of PSRO's are to ensure (1) that the health services provided are necessary; (2) that the quality of services meets professionally recognized standards of care; and (3) that the type of facility used is the most economical in keeping with the medical needs of patients whose care is paid for under the medicare and medicaid programs [Schultz and Johnson 1976, p. 195]. One thing that is consistent in all of these programs is the peer review aspect of quality assessment.

While the MHSS is presently exempt from PSRO scrutiny and the related legislative requirements, DOD medical facilities are involved in quality assessment activities. These include tissue committees, medical audit and utilization review. The MHSS, for the most part, has established their quality assurance programs along the lines recommended by the Joint Commission for Accreditation of Hospitals (JCAH). The JCAH recommendations include; effective performance of medical staff credentials function; medical care evaluation through both retrospective (medical audit) and concurrent (utilization review) programs; and continuing medical

education programs shaped by demonstrated current needs especially those revealed in medical audit and utilization review [Schultz and Johnson 1976, p. 190]. MHSS quality assessment activities are primarily peer-review or physician directed mechanisms.

The continued involvement of the physician and the gradual inclusion of explicit cost control in quality assessment is logical when considering the factors being evaluated. The quality related items that are most generally looked at include unnecessary hospitalization (both admission and length of stay), and a broad range of inappropriate procedures and treatment [McKillop 1975]. The risks to the patient from unnecessary or inappropriate treatment (including surgery) are evident and should require no documentation. But even if no risk is involved there is still an associated cost for which no benefit is gained. One link between quantity and cost could be the assumed relationship between quantity and quality. Some have assumed that an essential characteristic of a high-quality medical care program is access to an unlimited quantity of medical care. While this idea may have been attractive at one time, it is likely that unlimited quantity and high-quality health care services may be mutually exclusive [Rogatz 1973]. It is felt that the public's expectation is that its medical profession will provide health care that is needed, that the care will be of high-quality and provided in a cost-effective manner, and that the provision of unnecessary care will be avoided. Methodologies

to measure quality, however self contained and effective they may seem to their author, will not meet public expectations unless they also achieve these social needs [McKillop 1975].

One relationship of quality and quantity is shown by Enthoven (1978A) in what he terms "flat of the curve medicine." This idea is based on the economic principle of the law of diminishing marginal returns: as one input is applied to a production process in successively larger amounts, the resulting increases in output will each be successively smaller. The marginal return (the increase in output associated with a unit increase of input) may even become zero or negative.

Medical examples of diminishing marginal returns can be seen in the relation of health outcome to more days in the hospital for a patient with a given diagnosis, or the relation of the probability of a correct diagnosis to the number of diagnostic tests ordered, or the relation of the health status for a given population to the percentage of that population having undergone a particular elective surgical procedure [Enthoven 1978A]. The idea is that health care resources are being applied with no discernible health benefit realized. One indication of this sort of "flat of the curve" medicine could be a partial explanation of the higher hospitalization rate for patients in the fee-for-service practice compared to those in pre-paid health plans [Nesbitt 1978]. Another indication of this practice can be seen in second opinion surgical consultation programs.

One study looked at several of these programs in New York City. Some of the programs required the second opinion, in the others it was voluntary. In the voluntary programs, 34 percent, and in the mandatory, 17 percent, of the recommendations for surgery were not supported by a second opinion [Enthoven 1978A]. This would seem to indicate some question of the supposed benefit of some surgical procedures given the lack of consensus by two qualified surgeons.

If the relationship of quality and quantity are reasonably apparent then the relationship of quantity and cost should be obvious. Increased quantities involved increased prices. If no additional benefit is realized then the additional cost should be avoided. This is the basis of cost containment education and is the reason that cost containment is the logical follow-on to any attempt to assess quality in health care. Cost containment programs can be the vital underlying factor that brings the various aspects of quality assessment together.

Awareness of economic aspects allow, to a certain degree, for the quantification of some of the factors concerned with difficult medical decisions. While favorable cost benefit ratios are not intended to be the primary basis for a physician's decision, they must be considered.

The medical audit, utilization review and cost containment activities in reality seek common goals. They attempt to perform the same function, that of assuring

the highest possible level of health care by approaching the factors involved from various directions. The cooperation of the groups involved and the sharing of information and results can only result in increased benefit for all concerned. Physicians can no longer follow a path of technical excellence alone. All aspects of quality must and will be considered, if not by the physician, then by someone else. The politicalization of health care brought about by insured services and public demand will create the leverage necessary to accomplish this [McKillop 1978]. The public will eventually receive the quality assurances it wants, with or without the physicians help, because it is (collectively) paying for it. But such an outcome is not a substitute for a rationally developed health policy [McKillop 1978].

The results could be an extension of government intervention, which may well put non-participants in the role of writing and imposing regulatory activities [Nesbitt 1978]. The result would be a situation where professionals who are knowledgeable in an area are removed from decision-making roles, while bureaucrats who have little, if any, expertise are put in charge of monitoring procedures.

An alternative is a health policy which includes a system of rational admission criteria, discharge planning and utilization review. These measures are considered basic to an effective quality assurance program, while

they are also appropriate measures for cost containment [Reinfrank 1976].

Given the range of possibilities the continued involvement of the physician in quality assessment is not only valuable but vital. This involvement must include the full range of quality determinates. This must almost by definition, include cost containment, especially the consideration of cost-benefit relationships. In this way, the physician, given his dominant role in the delivery and assessment of health care, can, with proper awareness, facilitate the achievement of an even higher level of quality in patient care while making what may be the most significant contribution to the effort of containing health care costs.

V. OBJECTIVES OF COST CONTAINMENT EDUCATION FOR PROVIDERS

To this point we have: considered issues related to the rising cost of health care; become aware of the complexity of the various causes for rapidly rising costs; examined the central role of the physician and the impact of this role on health care costs; and looked at the relationship of quality to cost. Throughout, the need for rational constructive action has been stressed. Vital questions must be answered. These questions, the answers to which will impact heavily on the future structure of health care delivery, have recently been stated as:

- What is an acceptable level of access?
- What is an acceptable level of quality?
- What is an acceptable level of cost?
- What is the acceptable balance among quality, access, and cost? [Jensen 1977, p. 5]

These are broad based societal issues which cannot be dealt with, much less answered by, the physician alone. On the other hand they should not be answered without physician involvement. For this reason the first step toward rationally answering these problems would seem to be an increased economic awareness on the part of the physician. The delicate balances required by the somewhat conflicting issues cannot be achieved without the appropriate awareness of

factors involved. It is for this reason that cost containment education for providers is proposed and discussed in the following two chapters. In this chapter the objectives for such a program will be outlined and existing programs reviewed. In the next chapter a basic program will be outlined for use as a model for the establishment of such programs at MHSS facilities. As indicated previously, the essentially "closed" system of the MHSS appears to be an ideal arena in which to test various structural changes in health care delivery.

Can a cost containment program solve all the problems facing health care today? Probably not. That there is no single or best answer is becoming painfully clear. The complex problems must be faced individually, but in a coordinated manner, so that the solution to one problem doesn't exacerbate another. This requires a cost containment education program. The issue of cost is inseparable from the quality and access issues and can no longer be ignored by the physician. High quality care is of little use if it is only available to a limited few, for whatever reasons.

The question of cost control is relatively new to the physician. In the past, most of the necessary information on this subject was not included in medical education or training. Surveys cited earlier have shown that physicians generally are not aware of the total cost of services to the patient. Without doubt the physician must be made more aware in training and practice of the cost of services in

order to begin consciously considering the appropriate balance between cost and quality [Jensen 1977].

The overall objective of a cost containment education program is to affect positively the quality of health care, while attempting to increase the effectiveness and efficiency of each health care dollar spent. This broad goal is based on the accomplishment of several related objectives which include:

- Increased physician awareness of the economic factors of health care delivery.
- Examination of the patterns of practice-(of self and peers).
- Elimination of unnecessary risks and costs.
- Increased awareness of sensitivity, specificity, and predictive value of diagnostic procedures.
- Examination of alternative practices.

ie: outpatient surgery

preadmission testing

improved scheduling

sequenced diagnostic testing

- Coordination of functions and goals of Medical Audit and Utilization Review with cost containment efforts.
- Increased awareness of Resource Management Methodologies.
- Early and continued exposure to cost containment concepts.

The above objectives should be included as a minimum for any comprehensive cost containment program, and will each be expanded upon in the next chapter as they are applied to the education program.

One guiding philosophy should be kept in mind as one attempts to piece together an effective cost containment education program: excellent medical care does not always mean the most expensive, and expensive medical care does not guarantee excellent patient care [Hurst 1978].

There is presently very little information available on which to base a cost containment education program for physicians. The idea is still in its infancy. The programs which are presently underway are centered for the most part in medical schools. In the summer of 1978 a survey was performed on behalf of the Association of American Medical Colleges. The object of the survey was to ascertain the degree of program activity at medical schools in the area of cost containment education. A total of 119 U. S. medical schools were surveyed. The response rate was 100 percent. Of 119 schools, 41 indicated that their institutions had already developed or had made definite plans for an indentifiable program specifically designed to teach health care cost containment to either undergraduate or graduate medical students or both. Of these 41, 21 had fully implemented programs, 2 programs had been partially implemented and 18 were still in the planning stages. Of

the 23 programs that were either fully or partially operational, 3 had been in effect for 8 or more years, 10 had been operational 3 or more years, and the remainder had started since 1976. Of the 78 institutions which did not have a program, 53 indicated that there is some definable activity among the faculty toward this goal and a general receptivity to initiate such a program [Hudson and Braslow 1979]. This study points out not only the newness of the movement toward cost containment education but also the rapid growth of interest in such programs. This makes it difficult to gain qualitative information concerning the results of these programs. At best, we can look at a few in light of what they are doing and what they hope to accomplish.

One of the older cost containment education programs is at the Medical College of Ohio in Toledo. It began as a program in quality assurance with the introduction of cost components as a natural outgrowth of the examination of quality of care issues. The program involves clerkships during a required community medicine rotation for fourth year medical students. In a seminar format students audit patient charts for several factors, focusing on appropriateness of the diagnostic tests ordered, and present critiques and analyses of the treatments given. Because the charts selected are those of patients treated by other medical students, it is a peer review situation. The

student audits consistantly find examples of unnecessary tests. Thus the program encourages knowledge of the costs of diagnostic procedures as well as more conscious decision making on the part of the students. The program attempts to install a sense of cost as an outcome of the decision-making process. The program promotes a questioning of the physician's own actions, and a knowing of why tests are being ordered [Garg, Klienberg, and Glieb 1978].

A program at Jefferson Medical College combines the aspects of utilization review with cost containment education. The program consists of a Student Model Utilization Review Committee made up of junior year medical students during their 6 week clinical clerkship in the family practice unit. The program involves 90 minutes each week for each group of students. During the first session a pretest is administered concerning issues related to cost containment in the health care field. During the remaining five sessions cases are presented by the students. These cases are discussed from various perspectives including those of the local PSRO, Blue Cross organizations, utilization review coordinators and physicians. No attempt is made to confine discussions to monetary matters; instead the full range of utilization concerns are examined. The results of this program indicates a increase in understanding of the general issues relevant to utilization review and cost containment and a general acceptance of the activities as being

necessary. Students are faced with realistic problems for which there are no easy answers. The program stresses the recognition of alternatives and the complexity of cost containment issues [Zelevnik and Gonnella 1979].

A program at the Hospital of the University of Pennsylvania uses a feedback technique to educate resident physicians about the costs of diagnostic procedures. Computer printouts of daily laboratory use are examined by auditors using a criteria developed by medical experts specifically for the program. Feedback on what appears to be excessive or inappropriate use is provided to the physicians involved. Because the residency program uses a team care approach with residents paired with attending physicians, the information is provided to both types of physicians. The reactions to the feedback appear to range from thankful to resentful [Friedman 1979].

The Stanford University Medical Center has introduced several courses into their medical curriculum which deal with cost containment measures. In the first year a course called "Introduction to Clinical Methods" covers a wide range of topics including the efficacy of diagnostic tests, decision analysis, bayesian analysis, an understanding of the economic aspects of medical care, and an understanding of the socio-cultural barriers to the delivery of good medical care. In the second year a course called "Introduction to Clinical Reasoning" teaches the design and use

of a problem list while emphasizing the parsimonious use of diagnostic procedures. In the third year a course on controversies in current medical practice is offered. This course is conducted in a seminar format and looks into a broad range of important current controversies including questions in medical research methodology. During clinical clerkships, teaching conferences reinforce the previously learned lessons concerning clinical reasoning and cost effective medical care. Other projects at Stanford include a study of the impact of educational interventions on house staff use of laboratory tests. This involves computerized feedback to the house staff (consisting of a report of the number and cost of lab tests that they have ordered compared to their colleagues). Another project in the works is the development of a manual on the effective use of several specific laboratory tests [Marton 1980].

The University of Missouri-Kansas City School of Medicine has established a system by which they analyze health care costs in their teaching hospital. This involves a computer breakdown of costs incurred by four different health care teams which compete against each other to keep within an allotted budget. The teams are composed of not only medical students, residents, and attending physicians, but also unit managers, ward clerks, nursing aides, dieticians and information specialists, all of whom contribute in keeping costs at a minimum. All diagnostic and treatment

methods are considered in light of their cost differences. Student physicians learn not only the use and indications for the various tests and drugs, but also the cost to the patient and to the health care system of their diagnostic and therapeutic decisions [Kriedel and Winston 1978].

Presently the National Fund for Medical Education (NFME) is supporting 15 different projects dealing with either direct instruction programs in cost containment or the cost-effective use of technology. Additionally NFME is supporting 6 more projects dealing with cost-quality issues [National Fund for Medical Education 1979, pp. 11-13]. These projects are involved in a broad spectrum of issues dealing with the search for balance among the issues of access, quality and cost.

Obviously there are many projects underway which focus on cost containment education for physicians. These are attempts to fill a gap in medical education that until recently has received little attention. Although these efforts are too new to be able to determine the specific results or see any broad national trends, the attitude of those involved is encouraging. The NFME estimates that if cost containment programs are incorporated into medical curriculums now (given the annual number of medical school graduates), by 1990 more than a third of the physician population will have been affected [National Fund for Medical Education 1979]. With the emphasis on cost and

quality, and with the programs goal of using both hospital and physicians services for the greatest benefit of the patient, the payoff may be more immediate. The students are not just learning the aspects of cost and quality, they are learning good medicine [Friedman 1979].

VI. COST CONTAINMENT EDUCATION

It is apparent by now that there is no simple answer to the problem of rising health care costs. Similarly there is no one design for a cost containment education program. The structure and content of each program will vary from situation to situation. Also, the programs should change and grow as experience and further studies add to the now small pool of cost containment education knowledge. What follows should not be construed as a ready-made cook book education program for immediate application. Rather this is a suggested outline dealing with the following sorts of questions: What should be taught; who it should be taught to; and, how it should be taught. Actual programs can and should be adapted to meet the needs and goals of the individual facility involved. It is recommended that no education program be implemented until a thorough study has been made of the specific needs and available resources relative to such a program. This type of preliminary study can assist in shaping the size and scope of the program to the actual task, while preventing the starvation of an over ambitious endeavor due to the lack of adequate material and personnel support. It is important that there should be minimal disruption of the normal ongoing operations within the facility involved. In most cases programs can be

implemented using available established systems and personnel without the need to establish a large dedicated support mechanism. The intent is to improve overall efficiency and lower total costs, if possible, and to avoid making excessive administrative demands. Therefore, when designing a particular program the theme should be simplicity and integration.

As stated before, the three main issues to be addressed are: what, who, and how to teach. The first question we will attempt to answer is what to teach.

The primary subject to include in the curriculum is "cost awareness". This theme should be interwoven throughout the program. In order to expose the providers to the economic significance of rising health care costs some method has to be employed which will demonstrate the size and relevance of these costs. Some of the references cited in this paper can be used to provide a macro view of recent increases in overall health care expenditures. These can be used to show hospital and physician costs in the private and DOD sectors. These sources will also be useful in giving the students a feel for the factors influencing these costs. But the most effective cost figures are those reflective of operations at the facility involved.

In the MHSS actual cost figures are a little more difficult to obtain than those in the private sector due to the absence of patient billing. However, the MHSS has

recently adopted a uniform chart of accounts (UCA) which can be extremely useful in determining at least a reasonable approximation of the costs incurred. The UCA shows a breakdown of both inpatient and outpatient costs per day/visit by medical specialty for each clinic and ward. These costs include laboratory, x-ray, pharmacy, ancillary and support costs. Each of the costs is individually shown in the reports as well. Most of the above indirect costs are allocated according to a step down procedure that relates the various weighted cost/performance factors to the allocation factors (i.e., occupied bed days, outpatient visits, etc.), which are based on end use. The cost/performance factors are based on nationally recognized standards applicable to the particular services involved (i.e., College of American Pathologists weight factors for lab services, etc.) [OASD (HA) 1978]. By taking the cost per weighted procedure it is possible to determine the cost for a particular laboratory, x-ray, or pharmacy procedure by multiplying the unit cost by the standard weight factor for that procedure [Roman 1980]. This can be useful in obtaining approximate costs for the care provided to individual patients and to allow for most of the desired comparisons. It is important that cost data be presented in such a manner as to allow comparison. These comparisons can be between patients with similar diagnoses, between practitioners, between clinics, between wards, or between whole facilities. The intent is

to stimulate interest on the part of the practitioner concerning the differences in cost for similar patients and types of care. It would be of little use to simply provide cost data reflecting the costs incurred on behalf of one practitioner without allowing for comparison with other equally "effective" sources of care. There must be realization by the provider that every activity incurs some cost. It is generally accepted that there is no such thing as a "free lunch". This is only too true of health care.

This brings us logically to the next area of the education program; cost-benefit considerations. Hopefully, for every medical test, procedure, or treatment performed there is positive benefit. In order that the balance between quality, access, and cost be optimally determined, it is necessary that the expected benefits be matched with their expected costs. This matching is needed to assist in making the difficult decisions concerning medical resources. The goal is to find a mix of techniques that is responsive to patient need, that protects the best aspects of provider discretion and clinical judgement, and that protects the public purse [Mechanic, 1978]. Much can be done to enhance the quality of decision making by providing physicians with a greater understanding of the probabilities and statistics relevant to the alternatives available. Various forms of probability analysis are available to assist the physician in choosing appropriate diagnostic

procedures [McNeil 1975]. An understanding of the mathematics involved in finding the sensitivity, specificity, and predictive value of a particular procedure can assist the physician in ordering only the most appropriate tests for the particular situation. An understanding of Bayes rule can be an important diagnostic tool. This rule says essentially that: the probability of a given disease depends on the probability of the disease giving a particular finding, the probability of the finding or findings being present in those with the disease, and the prevalence of the disease in the particular population being studied. An example of this can be seen in the different significance that should be assigned to a positive electrocardiogram stress test on a young woman to that of a positive result recorded for a man [Hurst 1978]. Not only should physicians understand the methods for determining the usefulness and predictive value of the procedures they use, but they should demand that this information be made readily available to them. Additionally, physicians should be able to defend the use of particular procedures which they include in their decision-making. A test should not be performed, even if "appropriate", if there is a test that is more sensitive or specific. Physicians tend to use the most recent method that is claimed to be superior in value to previous methods, while continuing to order the older tests that the new one should have replaced [Hurst 1978].

If a physician can be urged to include a cost-benefit type analysis in choosing among alternatives for the diagnosis and treatment of his patient's problems, much of the excess and duplicate services provided to the patients can be reduced. This reasoning can be extended into the area of health record keeping. If the patients record could be kept current (including all tests and results) and transferred with the patient to the various specialty clinics and upon hospitalization, much duplication of testing could be avoided. The ultimate question which should be asked is: is this procedure necessary to enhance the quality of care? If so, will the benefit gained justify the risks and cost involved? If not, then the decision should be reconsidered. This sort of analysis should lead to an examination of the physician's patterns of practice. This examination should not only concern itself with the effectiveness of care provided but with efficiency of the methods involved. One author refers to a type of high quality medical practice he calls "academic medicine." Academic medicine is determined by the quality of the thought process involved rather than the sophistication of facilities available. It implies that the physician knows what is needed for the problems at hand, and that they do not order more than that, and "that they think more than they order" [Hurst 1978]. There is a growing feeling among physicians who are committed to cost containment that doctors should be able to rely

somewhat less on costly diagnostic procedures and place more reliance on sharpened clinical skills [Kircher 1978].

While it is important to control costs it is also important that the quality of care not deteriorate. That is, necessary care should not be omitted purely to contain health care cost. This is part of the purpose behind quality assurance programs. The Medical Audit and Utilization Review Procedures are intended to ensure that the care patients receive is appropriate and meets at least the minimal criteria established. The education program should involve the students in the actions of these committees as well as in promoting increased understanding of the methods and goals of these groups. Involvement in these efforts allows students to compare and examine the patient care patterns of their peers. The model utilization review committee at Jefferson Medical College cited earlier is an excellent example of such a program. Most quality assurance activities examine appropriateness, necessity, and adequacy of the care given. They rarely, when comparing the care given with the minimal stated criteria, address the cost issues involved. These issues include unnecessary duplication of services and the provision of services far beyond what is called for by the minimal criteria and or the condition of the patient [Daiger 1970]. Another item that is usually not included in Medical Audits is the type and amount of procedures involved in arriving at the

admission diagnosis. Also, these audits look at the appropriateness and necessity of treatment but they do not address the reasonableness of the costs incurred. These are issues that can and should be addressed by cost-conscious physicians. The cost containment education program should stress the interdependence and compatibility of cost and quality.

The cost containment education program should encourage the establishment and use of the various cost-effective health care practices. These include preadmission testing and outpatient surgical capabilities. These two items alone can account for significant savings. Another cost effective procedure involves sequenced diagnostic procedures. This is accomplished by performing the tests in the order determined by the expected percentage of diagnostic yield. By performing the tests in this order rather than in mass, unnecessary tests can often be avoided based on an early diagnosis [Boxer 1978]. Scheduling of admission and pre-hospitalization testing to coincide with staffing and workload constraints can avoid unnecessary cost and inconvenience on behalf of the patient.

One item that could have a significant impact on long range health care costs is patient education. Physicians should be impressed with the need for their involvement in educating patients to carry out their responsibilities for their own health. If physicians could be more active in

their role of prevention and patient education, the efforts in these areas could become more credible and possibly more effective [Boxer 1978]. Additionally, physicians could be effective in providing the necessary knowledge to allow patients to provide some aspects of follow-on self care.

Because physicians have significant influence over the acquisition and use of a broad range of both personnel and material resources, it is imperative that their managerial skills be sharpened. As noted earlier, these skills are even more vital for the physician in the MHSS. Therefore it is recommended that this program include training in personnel management, organizational behavior, material management, and techniques for capital and operating budgeting. It should not be the intent of the program to make administrators of the physicians but rather to improve their awareness of the administrative complexities involved in the provision of health care. Just getting the administrators and the physicians to speak the same language would be a tremendous improvement. There is a growing belief that the acquisition of general management skill by physicians will enormously enhance the efficiency and effectiveness of the health care system [Herzlinger 1978].

In addition to management skills, there seems to be an increasing need for an awareness of the legal and regulatory aspects of health care delivery. While the military physician is presently insulated from the majority of the federal

and state regulatory agencies (ie., PSRO's, planning agencies, etc.) there is a growing mood that "whats good for the private sector is good for the federal sector as well." "The government should not expect from others what it does not expect from itself" [Derzon 1978]. The legalities of health care in and out of the military are complex and at least some minimal understanding should be provided for the military physician. Because both the legal and regulatory aspects of health care are complex and constantly changing, they should be the subject of continuing education activities.

The various topics discussed above can in no way be considered as all inclusive. As indicated before, these are areas the author feels are important to the cost containment issue and related continuing education programs.

The next area to be examined is the question of who should be taught. The general feeling in the civilian sector is that this type of education, which essentially involves behavior modification, should occur as early as possible in the physician's career. It is believed that early exposure can facilitate change prior to the establishment of firm habits of practice [Friedman 1979]. In the MHSS there is ample opportunity to expose young doctors to this sort of educational experience. In addition to the Uniformed Services University of the Health Sciences (USUHS-DOD's Medical School), DOD has a large Graduate Medical Education (GME) program with residencies and internships located

throughout the U.S. In 1978, the Navy alone had 715 residents and 211 interns in graduate medical programs involving various medical specialties [BUMED 1978, p. 29]. While a cost containment education program would be a valuable asset at USUHS such a program would have to be established at the DOD level. For the purpose of this paper the author wishes to deal with the vast opportunities available within the Navy Medical Department. It is hoped that successes in this area would lead to DOD wide efforts. It appears that the 900 plus graduate medical students in Navy programs could provide for a significant test of the effectiveness of such a program. The feasibility of such a navy education program should be tested at one of the Navy's 9 teaching hospitals. The author suggests that the National Naval Medical Center at Bethesda, Maryland would offer an excellent location due to the substantial educational support available close by (eg., the USUHS and the Naval School of Health Sciences). The size of the population that can be reached through the GME program is large enough to make a considerable impact on the patterns of care provided in the Navy. And, these students are at the stage in their careers to gain the maximum benefit from exposure to such training.

Having looked at the questions of what and who to teach, we now address the question of how the program should be taught. This area concerns the structure of the program as well as the methodologies involved in actually teaching

the subjects concerned. The "How" aspect may well be the most important of the three. A program which in reality is dealing primarily with organizational issues must be approached carefully when dealing with the professional orientation of physicians. Physicians have been characterized as more "cosmopolitan" than "local". That is, their primary reference groups, reward systems, and loyalties are for the most part external to the organization to which they belong, and generally more oriented toward their profession [Plovnik, Fry and Rubin 1978]. Thus the approach should be made in a way that is not contradictory to the ideas and values of the external reference group. It would seem that the most effective approach would be that of using physicians as educators and role models. From the growing interest in cost containment it is hoped that a sufficient number of physicians would be motivated to serve in this capacity. The need for dedicated professional leadership and command support in these efforts cannot be over emphasized. With this in mind it is recommended that the program be organized under the auspices of a command cost containment committee chaired by the Director of Clinical Services. Membership of this committee should include the Director of Administrative Services, Director of Medical Education, the Comptroller, and the various chiefs of the clinical services involved. The committee could appoint temporary members to assist in solving particular

problems as necessary. The committee would be responsible for all cost containment efforts within the command. It is envisioned that this committee would be considered as a part of the overall quality assurance program and as such would establish strong liaison with the Medical Audit and Utilization Review Committees. It is felt that much can be gained by sharing of resources and integration of efforts. As pointed out earlier all of these programs share common goals. Overall program cost and complexity can be reduced by sharing of common information resources (ie., Audits, Reviews, and UCA data).

The following are among the various methodologies which can be used to present the information and issues to the students:

1. Feedback of relevant cost data to the students - As outlined earlier meaningful data can be extracted from the UCA reports, which can be presented to the students in various settings.

2. Seminars - in which particular utilization problems are discussed using selected patient charts as examples. The necessity and appropriateness of the services provided can be judged and the costs of those deemed excessive estimated.

3. Peer review - Students can be assigned duties involving the actual medical audit and utilization review functions of the command. This can assist the student in

gaining a broader perspective of the quality assurance program.

4. Lecture programs and seminars - involving case studies dealing with a broad range of clinical and administrative issues are essential to provide meaningful exposure to the salient issues of health care delivery. The regularly scheduled teaching conferences can be used to provide opportunities for guest lectures to deal with such subjects as management training, medico-legal issues, and financial management.

5. Teaching rounds - offer excellent opportunities to underscore cost/quality relationships. Attempts can be made to create awareness in the students of the role of the physician relative to the high costs of health care. These can be used to show the student how various patterns of practice affect quality and cost.

6. Laboratory newsletter - This newsletter should be published at least monthly. Each newsletter should, in addition to giving overall utilization data for the command and updated information concerning services provided, spotlight two or three widely used diagnostic tests. Information provided on these tests should include sensitivity, specificity, and predictability as well as available alternatives and the costs involved. Such information can be useful for all practitioners at the medical center.

The methods for cost containment education are numerous and limited only by the talent and imagination of those involved.

Most Naval medical centers possess a broad pool of clinical and administrative talent on which to draw to provide adequate resources for a cost containment education program. Occasionally it may be desirable to draw on civilian sources in order to provide fresh perspectives on the issues involved.

However the program is implemented it is necessary that quality care should not be sacrificed solely to cut costs. The overall objective of attempting to balance access, quality, and cost should be kept constantly in mind. The program and its effectiveness will depend significantly on the support of the physician both directly involved in the program and those indirectly involved as staff physicians at the medical center. The staff of the facility must be convinced of the value of the program. The cost/benefit worthiness of the program must be convincing in order to compel those directly involved to dedicate sufficient time and energy to the program in order to ensure its effectiveness. This may be the most significant task that the cost containment committee will have to accomplish.

VII. DISCUSSION AND RECOMMENDATIONS

Health care costs are continuing to demand an increasing share of national expenditures. The causes, as we have seen, are many. They range from growing demand and inflation to increased use of expensive technology and duplication of underutilized facilities. Various techniques have been used in an attempt to bring health care costs under control. As yet, most of these attempts have been external to the health care system and of questionable value. A close examination of the substance of health care costs points to the significance of the physician's role. It has been estimated that the physician influences directly or indirectly as much as 80 percent of the cost of medical care. It is the physician who prescribes drugs, orders diagnostic procedures, hospitalizes the patient, and decides when the patient is ready and able to be released. It has been only recently that this role has been examined in the light of its effect on cost. The few attempts to consider this factor in enacting cost control regulation have been ineffective external caps (i.e., rate setting and usual customary fees). Relatively little has been done to look at patterns of practice and medical education and their effect on the cost of health care. The goal of medical practice has always focused on increasing levels of quality. The increased

access to medical care created by insured services has weakened incentives to contain costs. Thus the desire for higher quality and greater access has run head-on into the realities of escalating costs. The physician's key role in this dilemma would be difficult to refute. The training and orientation of the physician leave him ill-prepared to deal with the vital trade-offs with which he is faced. Until very recently the subjects of cost awareness and cost containment have been noticeably missing in the training and education of physicians. It is this gap that cost containment education is expected to fill.

Increased public demand for cost/quality accountability have lead to pressures which are beginning to exhibit themselves in the form of increased health care regulation and changing structures for health care delivery. If, as some believe, there are to be major changes in the manner which health care is delivered, the physicians role is vital. The physician must be involved in any meaningful decisions concerning such changes. Cost containment education is just one method of attempting to make the physicians contribution as beneficial as possible.

In the MHSS the lack of cost awareness is an even more serious problem. Given the larger role the physician plays within the MHSS, his control over scarce health care resources is greater and of more direct significance. It has been the intent of this paper to introduce the concept

of health care cost containment education for physicians in the MHSS. It is asserted by this author that the need for such a program has been well documented. Preliminary indications of the results of efforts in the civilian sector are promising. It is further believed that considerable success could be achieved in the MHSS, though there are problems which may stand in the way of any meaningful cost containment efforts. The primary obstacle is the lack of significant penalties or rewards for relevant cost containing behavior. The present system not only isolates both consumer and provider from the actual costs of care provided but the present method of funding precludes establishment of the types of incentives found effective in the private sector (such as bonuses and revenue sharing). Studies are presently underway in conjunction with the MHSS capitation budgeting project in an attempt to discover whether such financial incentives are feasible in the DOD sector [Whipple 1977]. While strong financial incentives do not presently exist, it is posited by this author that there are other inducements for cost-effective behavior. One is that cost-benefit analysis behavior when applied to medical care, can often lead to improved quality. Studies discussed earlier point toward the reduction of excess and unnecessary services while quality levels remain unchanged. Cost effective medicine may not necessarily reduce total costs but rather hold down the rate of increase in these

costs. In this manner the same or higher quality medicine can be practiced while controlling costs. It is believed that cost containment education leads to the practice of responsible medicine, not necessarily cheap medicine. The types of medical practice promoted in cost containment education lead toward more effective use of resources, which is a vital skill required of DOD medical officers. There are presently no similar educational efforts in the MHSS. Increasing numbers of young medical officers coming into the military medicine will have had some previous exposure to cost containment education. This is due to the recent growth of these programs in civilian medical schools. Cost containment education in the MHSS could provide important follow-on to this initial exposure as well as the necessary reinforcement for continuation of the desired behavior. Another advantage for the cost aware physician is his strengthened professional autonomy. The wide range of subjects covered in a cost containment education program give the physician the necessary background and skills to logically support his recommendations and plans against some of the less well thoughtout political attempts to control health care costs. In many situations increased economic awareness can allow for a tempering of the "technological imperative" with economic responsibility.

The emphasis on responsible medicine, strengthened professional autonomy, and the reinforcement of earlier

cost education efforts allow considerable inducement for participation in cost containment education. On the other hand, there may be no need for strong incentives with which to reward subsequent cost containment behavior, at least not at this level. With the program aimed, as indicated earlier, at the young physician early in his career while still in the educational (apprenticeship) stage, it may be less difficult to evoke the desired behavior than to change the well established behavior of older practitioners. It is hoped that once given a clearer view of the cost, quality, access balance, the enlightened physician would naturally develop patterns of practice more consistent with the overall environmental realities both economic and professional.

While graduate medical education is posited to be the appropriate entry point for cost containment education, the structure of the MHSS would easily allow for the expansion of the program to staff physicians. These staff physicians serve as educators as well as role models and as such could lend a great deal of credibility to the promotion of cost effective medicine. For these reasons, when and if the program proves to be successful, cost containment education should be introduced into non-teaching MHSS facilities as a logical expansion of quality assurance efforts. Cost containment and the desire to practice and receive quality medicine are mutually supporting goals. The importance of both factors demand that their support be as widely based as possible. While GME is recommended as the

most effective point of entry it is not to be considered as the ultimate goal. The program should be spread beyond this initial starting point in a planned sequence, rather than merely allowing for attrition and advancing age slowly to complete the expansion process.

The expected benefits of cost containment education are wide ranging. As with any education program, the effect is expected to be long range. There will be limited short run pay-offs. The tenets underlying the present patterns of medical practice are well established, not necessarily in the medical students targeted for this program, but in the system as a whole. The educational programs may be looked upon as a nucleus for change, which if nurtured and supported, could in time have far reaching positive effects. The overall goal, which essentially is improved control over the runaway costs of health care, is in reality a long term goal. But, there are several intermediate and short term goals attainable through cost containment education. The first of these is to bring the physician face-to-face with the costs over which he has substantial influence. These costs make up the bulk of overall health care expenditures. While responsibility does not necessarily imply control, there does appear to be some room for improvement in the physician's decision-making process. Cost containment education is intended to allow for broadened input into this process and allow for greater overall balance.

Acknowledgement by the physician of his role and responsibility concerning the economic as well as the medical impact of his decisions is the first major step. The physician cannot continue to look to others for cost control and ignore his own influence in this area. Exposure to cost benefit analysis and other methods for improved decision-making will allow the physician to come closer to optimally choosing the critical balance of quality, access, and cost. These skills coupled with greater management skill can increase the knowledgeable participation of the physician in decisions concerning the organization and utilization of scarce health care resources. The benefit to be gained by the MHSS from this enlightened participation could be significant. Additionally this enlightened participation could result in greater command-wide support of over-all cost containment efforts. Greater participation by the physician can be the most effective method of ensuring that quality is not sacrificed for the sake of cutting costs. The quality of care can be increased by a better understanding of the use of diagnostic tools gained through cost containment education. The benefit gained for the effective and efficient use of diagnostic procedures can far outweigh the cost and risk of "shot gunning" a wide range of tests in hope of finding something significant.

Another related benefit is the increased awareness and involvement of the physician in the organization's medical

audit and utilization review programs. The practical necessity of such programs cannot be overemphasized. This author is convinced that DOD's present exemption from federal requirements for PSRO and planning agency involvement will not extend indefinitely into the future. DOD medical personnel must eventually face such intervention. Cost containment programs can and must be established in order to reduce the shock and conflict of such externalities.

Effective cost containment education of physicians can have a positive influence on the overall structure and organization of health services in the MHSS. The influence of the cost aware physician can also provide the necessary momentum to accomplish the elimination of costly excessive administrative and logistic requirements.

The MHSS, as an essentially closed system, provides an excellent arena for large sample testing of cost containment education. It is felt that the benefits of such a program will far outweigh any costs involved. The empirical data which is expected to result can assist in the development and expansion of such programs throughout the nation. Cost containment and quality assurance are not just DOD problems but concerns for the nation as a whole.

It is recommended that the MHSS and specifically the Navy Medical Department undertake a study to determine the feasibility of establishing cost containment education programs in conjunction with present GME programs. This study

should identify resource requirements and their expected sources. This study should seek input from present studies underway concerning capitation budgeting, provider incentives, case-mix weighting of output data and studies in other areas where results may impact heavily on cost and performance evaluation. The Naval Health Sciences Education and Training Command would seem to be the logical entity to sponsor and coordinate such a project. It is expected that a project team could complete a preliminary study within one year. Upon completion of this study it is recommended that a pilot project be field tested at two teaching medical centers for at least three years. This would allow for substantial collection of empirical data as well as a method of comparing results. It is recommended that one of these pilot projects be conducted at NNMCMC Bethesda, Md. for the reasons stated earlier. The other test project should be at one of the smaller teaching facilities to determine the influence of size and limited resources on the outcome of such programs. The further growth and expansion of the program would be determined by the results of these pilot projects. It would be difficult to make predictions or recommendations at this time relative to the content and structure of future programs pending results of the preliminary study and pilot projects.

In spite of the recent growth of cost containment education for providers there appears to be little empirical

data with which to accurately predict the effect of such programs on the cost of health care. Extensive study and testing is needed in this area and it is felt that the MHSS can make a significant contribution toward this effort.

That cost factors will become increasingly important in future decisions at all levels of health care delivery can no longer be denied. The physicians role as a cost generator must be faced by the physicians as well as those who are instrumental in making decisions concerning broad attempts to control these costs. Cost containment education for physicians is not the only answer to the present dilemma but it must be an integral part of any successful long-range solution. It is hoped that the dissemination of the information and recommendations contained in this paper will evoke the necessary support for the design and implementation of those much needed programs. The need for such action has never been greater, and the time is now.

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